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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------------|------------------|
| 10/825,851 | 04/16/2004 | Henry H. Ye | 2100.006200 BUEHRER 18-8 | 8197 |
| <div>7590 05/02/2007</div> <div>Mark W. Sincell Williams, Morgan & Amerson, P.C. Suite 1100 10333 Richmond Houston, TX 77042</div> | | | | |
| <div>EXAMINER</div> <div>DSOUZA, JOSEPH FRANCIS A</div> | | | | |
| <div>ART UNIT PAPER NUMBER</div> <div>2611</div> | | | | |
| <div>MAIL DATE DELIVERY MODE</div> <div>05/02/2007 PAPER</div> | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|----------------------------------|--|
| Office Action Summary | Application No. 10/825,851 | Applicant(s) YE ET AL. | |
| | Examiner Adolf DSouza | Art Unit 2611 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1, 4 and 10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 1 and 10, the specification does not provide an adequate description of what "one value indicative of a non-random portion of the first plurality of signals" means. The specification just repeats the above (Page 9, lines 21 – 22) without explaining what the value is or how it indicates what the non-random portion of the signals are.

Regarding claim 4, the specification does not disclose a "plurality of images associated with a first ray corresponding to a first transmitter". Instead the specification states that the plurality of images is associated with all rays associated with all transmitters, not just one ray (Specification, page 6, lines 7 – 16).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 - 3, 10 - 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Agee (US 20020150109).

Regarding claim 1, Agee discloses a method, comprising:

receiving a first plurality of signals corresponding to a plurality of antennas (Fig. 4, element 71; page 4, paragraph 50) ;

determining at least one value indicative of a non-random portion of the first plurality of signals (Fig. 7, element 115, 121, calculation of autocorrelation matrix $X^H X$; page 6, paragraph 74; wherein the one value indicative of a non-random portion of the plurality of signals is interpreted as calculating the autocorrelation matrix [see claim 2]);

and modifying the first plurality of signals based upon the at least one value indicative of the non-random portion of the first plurality of signals to form a second plurality of signals (Fig. 7, element 115; page 6, paragraph 74; wherein the input vector X is modified by R^{-1} to give the second plurality of signals Q).

Regarding claim 2, Agee discloses determining the at least one value indicative of the non-random portion of the first plurality of signals comprises generating an autocorrelation matrix based upon the first plurality of signals (Fig. 7, element 115, 121, calculation of autocorrelation matrix $X^H X$; page 6, paragraph 74; wherein the one value indicative of a non-random portion of the plurality of signals is interpreted as calculating the autocorrelation matrix).

Regarding claim 3, Agee discloses modifying the first plurality of signals comprises: inverting the autocorrelation matrix (Fig. 7, Equation 121; page 6, paragraph 74; wherein inverting the autocorrelation matrix is done to calculate Q from X in Equation 121);

decomposing the inverted autocorrelation matrix (Fig. 7, element 121; page 6, paragraph 74; wherein the decomposition is interpreted as the QR decomposition or the equivalent operations, namely Cholesky factorizations);

and applying a linear transformation to the first plurality of signals based upon the decomposed inverted autocorrelation matrix (Fig. 7, element 115, 121; page 6, paragraph 74; wherein the linear transformation applied to the first plurality of signals is $Q = X R^{-1}$).

Claims 10 - 11 are directed to apparatus of the same subject matter claimed in method/steps claims 1 - 2 respectively and therefore, are rejected as explained in the rejections of claims 1 - 2 above.

Claims 12 – 14 are directed to apparatus of the same subject matter claimed in method/steps claim 3 and therefore, are rejected as explained in the rejections of claim 3 above.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 4 – 9, 15, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agee (US 20020150109) in view of Applicant Admitted Prior Art (hereafter referred to as AAPA).

Regarding claim 4, Agee does not disclose the first plurality of signal comprise a first plurality of images associated with a ray corresponding to a transmitter.

In the same field of endeavor, however, AAPA discloses the first plurality of signals comprises a first plurality of images associated with a first ray corresponding to a first transmitter, and comprising detecting the first plurality of images using the second plurality of signals (Specification, page 6, lines 7 – 16; wherein the description refers to Fig. 4, which is Prior Art).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by AAPA, in the system of Agee because having the images from the various transmitters would enable the receiver to search these and setup the Rake receiver accordingly, as is well known in the art.

Regarding claim 5, Agee does not disclose how the images are detected.

In the same field of endeavor, however, AAPA discloses detecting the first plurality of images using the second plurality of signals comprises summing the second plurality of signals (Applicant's Fig. 3, elements 310(1) ... 310(n); wherein in Fig. 3 the images are detected in the input signals (160(1) ... 160(n)) and searching the summed second plurality of signals for the first plurality of images (Applicant's Fig. 3, elements 320).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to feed the second plurality of signals to the inputs 160(1) ... 160(n) of Fig. 3 since Fig. 3 essentially detects the images in it's input, as taught by AAPA and include this in the system of Agee because that would enable the images in the input stream to be detected.

Regarding claim 6, Agee does not disclose assigning a plurality of images to a plurality of fingers.

In the same field of endeavor, however, AAPA discloses assigning the first plurality of images to a first plurality of fingers (Applicant's Fig. 1, 2 and 4; wherein the searcher

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140 in Fig 1 detects the images and then assigns them to the Rake fingers in the Rake receiver 120; Specification, page 3, lines 4 - 11).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by AAPA, in the system of Agee because this would enable the Rake receiver to be setup, as is well known in the art.

Regarding claim 7, Agee does not disclose processing the plurality of fingers as a finger group.

In the same field of endeavor, however, AAPA discloses processing one or more signals associated with the first plurality of fingers as a first finger group (Applicant's Fig. 4, elements 410(1) ... 410(m); wherein the finger groups are interpreted as being formed by 410(1) ... 410(m)).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by AAPA, in the system of Agee because this would enable the delays in the finger elements to be tracked, as disclosed by APPA (Specification, page 3, line 22 – page 5, line 2).

Regarding claim 8, Agee does not disclose that the propagation delays in the fingers are equal.

In the same field of endeavor, however, AAPA discloses processing the one or more signals associated with the first plurality of fingers as the first finger group comprises processing the one or more signals associated with the first plurality of fingers assuming

that propagation delay estimates associated with the first plurality of fingers are equal (Specification, page 3, line 22 – page 5, line 2).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by AAPA, in the system of Agee because this would enable the delays in the finger elements to be tracked, as disclosed by APPA.

Regarding claim 9, Agee does not disclose summing and tracking signals associated with the fingers.

In the same field of endeavor, however, AAPA discloses processing the first plurality of fingers as the first finger group comprises: summing the one or more signals associated with the first plurality of fingers; and tracking the summed one or more signals associated with the first plurality of fingers (Applicant's Fig. 2, elements 225, 230, 200; Specification, page 3, line 22 – page 5, line 2).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by AAPA, in the system of Agee because this would enable the delays in the finger elements to be tracked, as disclosed by APPA.

Regarding claim 15, Agee discloses a signal transformer (Fig. 7, element 115; page 6, paragraph 74).

Agee does not disclose a receiver comprising a tracker, a controller and a searcher.

In the same field of endeavor, however, AAPA discloses a tracker, a receiver, a receiver controller, and a searcher (Applicant's Fig. 1, elements 110, 120, 130, 140).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by AAPA, in the system of Agee because this would enable the received signal to be processed by a Rake receiver, as is well known in the art.

Claims 16 - 19 are directed to apparatus of the same subject matter claimed in method/steps claims 5, 6, 9, 9 respectively and therefore, are rejected as explained in the rejections of claims 5, 6, 9, 9 above.

Other Prior Art Cited

7. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure.

The following patents are cited to further show the state of the art with respect to Rake:

Saito (US 5,943,362) discloses use of a Rake receiver in a mobile communication system.

Shou et al. (US 5,974,038) discloses a CDMA system that uses a Rake receiver.

Murai et al. (US 6,154,487) discloses a Spread Spectrum system with a Rake receiver.

Ichihara (US 6,229,840) discloses a Rake receiver used in a CDMA communication system.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adolf DSouza whose telephone number is 571-272-1043. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

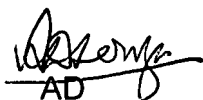
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Examiner
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